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ABSTRACT

The purpose of this study is to develop a model showing the relationship of academic, socioeconomic, and motivational variables to students' attrition in a community college nursing program, in order to determine the students who pass, or not pass, first semester, generic, and associate degree nursing courses. The theoretical framework used in the study included the following: (1) Tinto's (1975) Student Integration Model; (2) Bean's student Attrition Model; (3) Bean and Metzner Nontraditional Undergraduate; and (4) Stahl and Pavel's Community College Retention Model. The study ends with three conclusions that can be beneficial to faculty and administrators when evaluating attrition and retention of first semester associate degree nursing students. They are as follows: (1) students assessed at college language level had lower attrition rates than students with below college language level; (2) students with pre-semester grade point average of 2.5 and above had lower attrition that students with a grade point average between 2.49-2.00; and (3) the assumption that the three nonacademic variables would affect first semester final course outcomes was not supported and hours planned to work weekly, financial difficulty attending college and achievement tendency were not significant predictor variables. (Contains 15 tables.) (MZ)

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Predictors of First Semester Attrition and Their Relation to Retention of Generic Associate Degree Nursing Students

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Presented at the
Council for the Study of Community Colleges
Dallas, Texas
April 5, 2003

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Abstract

College campuses are increasingly being populated with students from diverse educational backgrounds. Community colleges with an open door admission policy are particularly affected, some experiencing first year attrition rates of 41% (White & Mosely, 1995). A diverse group of students enrolled in first semester nursing courses in a generic, associate degree, nursing program at a large urban community college, are exhibiting rates of attrition as high as 29-35%, as indicated by academic failure/voluntary withdrawal. This results in decreased continued enrollment and low retention in the nursing program. Many factors can account for the lack of academic success and students' response to failure. The factors can be grouped into 3 main classifications: a)academic, b) socioeconomic and c) motivational

The purpose of this study was to develop a model showing the relationship of academic, socioeconomic and motivational variables to students' attrition in a community college nursing program, in order to determine the students who pass, or not pass, first semester, generic, associate degree nursing courses. The theoretical frameworks used included a) Tinto's (1975) Student Integration Model, b) Bean's Student Attrition Model, c) Bean and Metzner Nontraditional Undergraduate Student Attrition Model and d) Stahl and Pavel's Community College Retention Model.

A correlational study, using a discriminant analysis procedure, was conducted to determine whether the five selected predictor variables could discriminate between the two grade groups and predict group membership in first semester courses. The dependent variable was the final course outcome, pass or not pass.

The findings of this study suggest three conclusions that can be beneficial to faculty and administrators when evaluating attrition and retention of first semester associate degree nursing students.

1. Students assessed at college language level had lower attrition rates, than students with below college language level. The difference was significant at the *p <= .001 level.
2. Students with a pre-semester grade point average of 2.5 and above had lower attrition than students with a grade point average between 2.49-2.00. The difference was significant at the *p <= .001 level.

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3. The assumption that the three nonacademic variables would affect first semester final course outcomes was not supported. Hours planned to work weekly, financial difficulty attending college and achievement tendency were not significant predictor variables.

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Outline

Background Information

College campuses are increasingly being populated with students from diverse educational backgrounds. Community colleges with an open door admission policy are particularly affected, some experiencing first year attrition rates of 41% (White & Mosely, 1995).

Research Problem

A diverse group of students enrolled in first semester nursing courses in a generic, associate degree, nursing program at a large urban community college, are exhibiting rates of attrition as high as 29-35%, as indicated by academic failure/voluntary withdrawal. This results in decreased continued enrollment and low retention in the nursing program.

Many factors can account for the lack of academic success and students' response to failure. The factors can be grouped into 3 main classifications:

Academic
Socioeconomic
Motivational

Research Question

Can factors be identified which accurately predict students' final course outcomes, pass or not pass, in their first semester, generic, associate degree nursing courses?

Research Purpose

The purpose of this study was to develop a model showing the relationship of academic, socioeconomic and motivational variables to students' attrition in a community college nursing program, in order to determine the students who pass, or not pass, first semester, generic, associate degree nursing courses.

Theoretical Framework

Tinto's (1975) Student Integration Model

Bean's Student Attrition Model
Bean and Metzner Nontraditional Undergraduate Student Attrition Model
Stahl and Pavel's Community College Retention Model

Nursing Students

Students in South Florida nursing programs mirrored students in the college environment. There was a decrease in traditional students and an increase in nontraditional students. Nontraditional nursing students had complex lives with family responsibilities, working, commuting to campus and many attended p/t (Jeffreys & Smodlaka, 1999). There was a decrease in the percentage of minority students who entered and graduated from nursing programs.

SETTING

The college is the fourth largest of the 28 community colleges in Florida and ranks seventh nationally in the total number associate degrees granted and eighth in the total number of degrees granted to minority students (Community College Week Web Site, 2002).

Statewide 37% of community college students were pursuing an Associate of Science degree or Certificate, and health science programs accounted for 22% (Armstrong, 2002).

PARTICIPANTS

Ethnic population	National	SE FL CC	Study CC
White (NH)	69.1%	30.6%	52%
Black (NH)	12.3%	23.2%	27%
Hispanic	12.5%	43.7%	18%
Other	4.6%	2.5%	3%

(U.S. Census Bureau,2000/ Armstrong, 2002/ Center for Health Science Education, 2002).

2001 enrollment Information:

F/T cr. students 5,723, P/T cr. students 21,353.
61.7% cr. students were female.
57.1% of total students were 20-34 yrs.
(Armstrong, 2002)

SAMPLE

The 18 month generic nursing program has the same admission criteria than all other tracks. A convenience sample was sought from the fall, 2001 admission class:

258 students were admitted
235 students agreed to participate
45 students had missing data
190 final participants (73.6% participation rate)

RESEARCH DESIGN

A correlational study, using a discriminant analysis procedure, was conducted to determine whether the five selected predictor variables could discriminate between the two grade groups and predict group membership in first semester courses.

The dependent variable was the final course outcome, pass or not pass.

RESEARCH INSTRUMENTS

Three instrument were used to collect data.

1. A researcher developed *Demographic Information* form obtained student demographic information and provided the researcher with the ability to obtain academic information (pre-semester GPA, final course grades).

2. The research instrument *Measure for Achieving Tendency* was developed by Albert Mehrabian (1978, revised 1994). The 36 items measured an individuals need for achievement, which was defined as the difference between one's motivation to approach success and to avoid failure.

Internal consistency reliability of .92 was acceptable and validity data correlated in predictive ways with general trait anxiety, goal commitment and effort and there was some success in predicting achievement-related behavior such as GPA (Huebner, 1998).

3.Test of Adult Basic Education (TABE) Form 8, Level A, Tests 1, 4 & 5 measured the achievement of basic skills found in college level work (12.9+). *Test 1 measured basic reading and construct meaning with vocabulary embedded. *Test 4 measured communication skills in the areas of sentence usage and mechanics. *Test 5 measured spelling skills needed for effective written communication.

Internal consistency reliability was .93 (reading & language) and .79 (spelling). Content validity was shown between test items and level of objectives (CTB/McGraw-Hill; Roger, 1998).

FREQUENCY TABLES

Frequency distribution for the five predictor variables were computed.

Pre-Semester Grade Point Averages (N = 190)

GPA	Frequency	Percent
3.50-4.00	13	6.8
3.00-3.49	46	24.2
2.50-2.99	75	39.5
2.00-2.49	56	29.5

English Proficiency Levels (N = 190)

	At college level		Below college level	
TABE area	Frequency	Percent	Frequency	Percent

Reading	66	34.7	124	65.3
Language	69	36.3	121	63.7
Spelling	105	55.3	85	44.7

Achievement Tendency Scores (N = 190)

Achievement tendency	Frequency	Percent
High	103	54.2
Average	41	21.6
Low	23	24.2

Hours Planned To Work

Hours worked	Frequency	Percent
More than 20 hours	70	36.8
16-20 hours	56	29.5
1-15 hours	27	14.2
Do not plan to work	37	19.5

Difficulty in Educational Financing (N = 190)

Level of difficulty	Frequency	Percent
Extreme	60	31.5
Marginal	95	50.0
None	35	18.4

CROSSTABULATION

Crosstabulation was done on the five predictor variables and their relationship to first semester, final course outcomes, pass or not pass.

Three variables showed a significant relationship to final course outcome:
*pre-semester grade point average
*reading level
*language level

Crosstabulation of Pre-Semester Grade Point Average and Final Course Outcome

GPA 3.5 and above	3.00 - 3.49		2.50 - 2.99		2.00 - 2.49				
Final course outcome	N	%	N	%	N	%	N	%	Total
Pass	11	84.6	35	76.1	39	52.0	27	48.2	112
Not pass	2	15.4	11	23.9	36	48.0	29	51.8	78
Total	13	100.0	46	100.0	75	100.0	56	100.0	190

There was a significant relationship ($\chi 2 = 13.29$ with 3 degrees of freedom [*p = .004]) between the two variables.

In the group of students with a GPA of 2.00-2.49, 51.8% did not pass.
In the group of students with a GPA of 2.50-2.99, 48.0% did not pass.

As students GPA increased the percent of students who did not pass dropped to 23.9% (3.00-3.50) and 15.4% (3.5 and above).

Crosstabulation of Reading Level and Final Course Outcome

	Reading score				
	At college level		Below college level		
Final course outcome	N	%	N	%	Total
Pass	52	78.8	60	48.4	112
Not pass	14	21.2	64	51.6	78
Total	66	100.0	124	100.0	190

There was a significant relationship ($\chi 2 = 16.45$ with 1 degree of freedom [*p <.001]) between the two variables.

The TABE test indicated that 51.6% of students with below college level reading scores did not pass.

Crosstabulation of Language Score and Final Course Outcome

	Language score				
	At college level		Below college level		
Final course outcome	N	%	N	%	Total
Pass	55	79.7	57	47.1	112
Not pass	14	20.2	64	52.9	78
Total	69	100.0	121	100.0	190

There was a significant relationship ($\chi 2 = 19.30$ with 1 degree of freedom [*p = .001]) between the two variables.

The TABE test indicated that 52.9% of students with below college level language scores did not pass.

Crosstabulation of Spelling Score and Final Course Outcome

	Spelling score				
	At college level		Below college level		
Final course outcome	N	%	N	%	Total
Pass	66	62.9	46	54.1	112
Not pass	39	37.1	39	45.9	78
Total	105	100.0	85	100.0	190

There was no significant relationship ($\chi 2 = 19.30$ with 1 degree of freedom [*p <.223]) between the two variables.

There were 85 students (44.7%) who had below college level spelling scores and of that group 39 students (45.9%) did not pass.

Crosstabulation of Level of Achievement Tendency and Final Course Outcome

Achievement Tendency

	Low		Average		High		
Final course outcome	N	%	N	%	N	%	Total
Pass	23	50.0	26	63.4	63	61.2	112
Not pass	23	50.0	15	36.6	40	38.8	78
Total	46	100.0	41	100.0	103	100.0	190

There was no significant relationship ($\chi 2 = 2.07$ with 2 degrees of freedom [*p = .335]) between the two variables.

There were 46 students (24.2%) who had low achievement tendency scores and of that group 23 students (50.0%) did not pass.

Crosstabulation of Hours Planned To Work Weekly and Final Course Outcome

Hours worked weekly

	Over 20		16 - 20		1 - 15		Not working		
Final course outcome	N	%	N	%	N	%	N	%	Total
Pass	44	62.9	29	51.8	15	55.6	24	64.9	112
Not pass	26	37.1	27	48.2	12	44.4	13	35.1	78
Total	70	100.0	56	100.0	27	100.0	37	100.0	190

There was no significant relationship ($\chi 2 = 2.29$ with 3 degrees of freedom [*p = .514]) between the two variables.

There were 70 students (36.8%) who planned to work 20 or more hours per week and of that group, 26 students (37.1%) did not pass.

Crosstabulation of Level of Financial Difficulty and Final Course Outcome

Financial difficulty

	None		Marginal		Extreme		
Final course outcome	N	%	N	%	N	%	Total
Pass	22	62.9	61	64.2	29	48.3	112
Not pass	13	37.1	34	35.8	31	51.7	78
Total	35	100.0	95	100.0	60	100.0	190

There was no significant relationship ($\chi 2 = 4.10$ with 2 degrees of freedom [*p = .129]) between the two variables.

There were 60 students (31.5%) who had an extreme level of financial difficulty and of that group, 31 students (51.7%) did not pass.

DISCRIMINANT ANALYSIS

The discriminant analysis procedure was appropriate in understanding the differences between groups. A stepwise analysis evaluated the 3 significant variables to determine which ones would contribute most to the discrimination between groups.

The classification results determined how well group membership could be predicted. The procedure found the linear combination of the dependent variables, which provided for clarity of interpretation.

The standardized discriminant coefficients and correlations between variables and the discriminant function suggest the two variables, college level language and pre-semester grade point average, best distinguished between the two groups by final outcomes, pass or not pass.

Standardized Discriminant Coefficients & Correlations for Stepwise Procedure

Variable	Coefficients	Correlations
College level language	.774	.856
Pre-semester grade point average	.524	.645

Note. $\chi 2$ (2, N = 190) = 26.84, *p < .001.

Classification Table for Stepwise Discriminant Analysis Procedure

	Predicted group membership				
Final course outcome	Pass (N = 112)		Not pass (N = 78)		Total (N = 190)
Observe	n	%	n	%	
Original					
Pass	73	65.2	39	34.8	112
Not pass	22	28.2	56	71.8	78
Cross-validated					
Pass	73	52.7	53	47.3	112
Not pass	22	28.2	56	71.8	78

Note. 67.9% of original cases correctly classified.
Note. 60.5% of cross-validated cases correctly classified.

Discussion of Results

In this study the first semester attrition was 41% (exceeded national average – 29-35%). The college level entry placement test (CLEP) at the college represented in this study indicated 65% of students needed remediation in reading and 47% in writing. As students' pre-semester GPA increased, the percentage of students with a final course outcome of not pass, decreased.

The variables weekly hours of work and financial resources were found not to be significant predictor variables and contrary to other research. There was no significant relationship between students' need for achievement and final course outcome.

Conclusions

The findings of this study suggest three conclusions that can be beneficial to faculty and administrators when evaluating attrition and retention of first semester associate degree nursing students.

1. Students assessed at college language level had lower attrition rates, than students with below college language level. The difference was significant at the *p <= .001 level.
2. Students with a pre-semester grade point average of 2.5 and above had lower attrition than students with a grade point average between 2.49-2.00. The difference was significant at the *p <= .001 level.

3. The assumption that the three nonacademic variables would affect first semester final course outcomes was not supported. Hours planned to work weekly, financial difficulty attending college and achievement tendency were not significant predictor variables.

Recommendations

1. The results of the study indicated that 79.7% of the students' who had English proficiency at a college level passed first semester nursing courses and 52.9% of students' who had below college language level did not pass. This strongly suggests that college language level is important to first semester academic success. Therefore, during orientation, prior to beginning first semester nursing courses, all students should be assessed for English proficiency . For students who do not test at the college level there should be immediate implementation of an intensive remediation plan in reading and/or language comprehension and follow-up testing. All students should be required to score at the college level before progressing in the program.

2. Faculty should investigate alternate textbooks that are more closely matched to the reading and language level of the students being admitted into the nursing program. Language becomes increasingly abstract as grade level increases (Phillips & Hartley, 1990), therefore one would expect students to have greater difficulty comprehending information in textbooks that were written above their reading and/or language level. Alternate textbooks and selected readings would provide a greater opportunity for students to be academically successful.

3. Faculty should reevaluate the minimum admission grade point average of 2.0 and the relationship to attrition for at-risk students. The admission grade point average should be raised to 2.5 or 3.0, if supported by future research. However, the research would have to show that the retention rate of students with the higher grade point average exceeded the

potential loss in the number of students who could be admitted with the lower grade point average, and who go on to be successful in completing the nursing program.

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